

Long Island Botanical Society

Vol. 29 No. 1

The Quarterly Newsletter

Winter 2019

Back from the Dead: The Rare Plants at Freeman Avenue, Islip

Stephen Young¹ and John Turner²

¹Chief Botanist, NY Natural Heritage Program, ²Co-Chair, LIBS Conservation Committee



Figure 1. From bare soil to a complex ecological community in 22 years. This 2017 photo reveals the high plant diversity at the Freeman Avenue site. Pyxies have delicate white flowers and moss-like evergreen leaves. Interspersed among the pyxies (left of center) is a “reindeer lichen” known as *Cladonia subtenuis*. Encircling the pyxies is a ring of wintergreen (aka teaberry) plants (*Gaultheria procumbens*), one with a red fruit. Dried needles of pitch pine (*Pinus rigida*) and dried oak (*Quercus* spp.) leaves decay and enrich the soil. Photo by John Turner, 12 April 2017.

Back in 1984, botanist Chris Mangels discovered many state-rare plants in an open sandy area with shrubs, forbs, graminoids, and bryophytes along Freeman Avenue in Islip, Suffolk County. Old aerial photographs dating back to 1938 show the area to be mostly shrubby with some trails through it³. It remained that way until the 1960s when clearing for a radio antenna for WLIE 540 increased the openness⁴.

By the 1980s, the area around the antenna had been cleared of trees and shrubs and was an open sandy/gravelly meadow

that became more mesic to wet on the western side bordering a pitch pine (*Pinus rigida*) woodland. Chris then contacted Bob Laskowski (who was knowledgeable about the Islip area) and Bob Zaremba (who, at the time, was a botanist for the Natural Heritage Program). Joe Beitel also visited the site because he had discovered a population of orange milkwort (*Polygala lutea*) in a small depression along Southern State Parkway just north of Freeman Avenue. (That population is now gone.)

(Continued on page 3)

³ <https://bit.ly/2GxbMk8>

⁴ <https://www.historicaerials.com/viewer>

Long Island Botanical Society

Founded: 1986 • Incorporated: 1989

The Long Island Botanical Society is dedicated to the promotion of field botany and a greater understanding of the plants that grow wild on Long Island, New York.

Visit the Society's Web site
www.libotanical.org

Executive Board

President

Eric Lamont 631-722-5542

elamont@optonline.net

Vice President

Andrew Greller agreller2@optonline.net

Treasurer

Carol Johnston

johnfjohnston2@optonline.net

Recording Secretary

Sue Avery suea483@gmail.com

Corresponding Secretary

Rich Kelly vze2dxmi1@verizon.net

Committee Chairpersons

Flora

Eric Lamont elamont@optonline.net

Andrew Greller agreller2@optonline.net

Field Trips

Allan Lindberg ajlindberg@optonline.net

Programs

Rich Kelly vze2dxmi1@verizon.net

Membership

Lois Lindberg lalindberg3@optonline.net

Conservation

Bill Titus dottie11560@hotmail.com

John Turner redknot2@verizon.net

Education

MaryLaura Lamont
woodpink59@gmail.com

Hospitality

Kathleen Gaffney kg73@cornell.edu

Dorothy Titus dottie11560@hotmail.com

Newsletter Editor

Eric Lamont
elamont@optonline.net

with special thanks to

Marie George

Webmaster

Donald House libswab@yahoo.com

Society News

LIBS thanks Margaret Conover for 14 years of service as Editor of the *Newsletter*. Margaret is a co-founder of LIBS and was honored with LIBS' Distinguished Service Award in 2016. Currently, she lives with her husband David in Eugene, Oregon. Thanks so much, Margaret!

New publication by Eric Lamont. LIBS' president recently published a paper entitled: "*Ageratina roanensis* (Asteraceae), a new combination for an endemic species from the Southern Appalachian Mountains" in *Phytoneuron* 2018-77: 1-3. This species has been treated for many years as a variety of *Ageratina altissima* (common white snakeroot) but differs consistently from it in morphology and ecology.

New book on lichens: *Delmarva Lichens: An Illustrated Manual*, by James Lendemer and Nastassja Noell (2018). Covers 299 species (288 color photos) and includes almost all of Long Island's lichens. 350 pages, hardbound, with 36 color plates. Published as Volume 28 of *Memoirs of the Torrey Botanical Society*. \$30.00. Copies can be ordered from the web site of the Torrey Botanical Society.

Environmental concerns on Long Island. At recent LIBS meetings members have reported on local development projects that have negative impacts on the environment. Karen Blumer reported on an oozing illegal sediment spillage on the Carmens River, Brookhaven Township; Vicki Bustamante expressed concerns over a plan to develop Point Woods, Montauk; Rich Kelly reported on a project by New York State to build a new facility at Jones Beach West End and cited negative impacts to vegetation and wildlife including snowy owls, hognose snakes, and rare butterflies; Larry Penny wrote a passionate letter to government officials pleading against the construction of a miniature railroad ride through Moores Woods, Greenport, home to the rare crane fly orchid (*Tipularia discolor*) and sensitive wetlands; Eric Lamont has been reporting on negative impacts to the old growth forest and wetlands at North Fork Preserve by Suffolk County DPW and Parks Department; John Potente reported on the negative impacts of Suffolk County's methoprene spraying in the Accobonic marsh, in addition to 20,000 acres of tidal marshland throughout Suffolk County.

2019 Long Island Natural History Conference: Friday & Saturday, 22-23 March 2019, Brookhaven National Laboratory. Save the date.

Botany Seminars at NYBG, January to March 2019. The below Seminars will take place at the Mertz Library, The New York Botanical Garden, Bronx. For more info, email Czimmerman@nybg.org

Date	Time	Speaker	Topic
Jan. 18	11am-12pm	Barbara Thiers	North American Herbaria
Jan. 25	11am-12pm	Seamus O'Brien	In the Footsteps of Joseph Dalton Hooker
Feb. 1	11am-12pm	Sonja Duempelman	Seeing Trees: A History of Street Trees in New York City and Berlin
Mar. 7	11am-12pm	Richard Powers	The Overstory

LIBS Membership Renewals for 2019 are due. Mail your dues (\$25 individual, \$30 family) to **Carol Johnston, LIBS Treasurer, 347 Duck Pond Road, Locust Valley, NY 11560**. Thank you for promptly renewing your membership thus saving volunteer time and the cost for follow-up notices.

(Back from the Dead continued from cover)

In June 1985, Bob Zaremba formally surveyed the site and documented the rare plants that had been discovered the previous year: orange milkwort, whip nut sedge (*Scleria triglomerata*), pyxie moss (*Pyxidanthra barbulata*), and primrose-leaved violet (*Viola primulifolia* var. *primulifolia*). Subsequent surveys turned up showy aster (*Eurybia spectabilis*), New England blazing star (*Liatris scariosa* var. *novae-angliae*) on both sides of the road, and Elliott's goldenrod (*Solidago latissimifolia*). Presently, the site is the best in the state for orange milkwort and pyxie moss (Fig. 1) and, along with very small populations at Connetquot River State Park Preserve, the most northern locality in North America for both species.

It is somewhat of a mystery how these rare plants got here since the site was not in its present condition until the 1980s. A potential seed source for the rare plants may have been located

Botanists from Long Island, especially Eric Lamont, Bob McGrath, and Chris Mangels, as well as Natural Heritage Program botanists from Albany, continued to monitor the rare plants at Freeman Avenue until the week of 20 November 1995 when Chris and Bob Laskowski visited the site and found all the vegetation had been bulldozed so that the underground wires of the radio antenna could be replaced (Fig. 2a). The top layer of soil was bulldozed into piles along the edge of the site while the wires were replaced. We thought that the bulldozing was the end of the rare plants at Freeman Avenue and we were especially sad at the loss of the pixies and orange milkwort. Steve Young went out with Bob Laskowski and took photographs of the disturbance which had left nothing but barren, disturbed soil and bulldozer tracks. Our only hope was that the piles of soil would be spread out on the site after the work was done. It seems like that was in fact what was done, although none of us was there to see it happen.



In late 1996, Chris Mangels noted that some of the rare plants were reappearing. He saw more than 250 flowering plants of orange milkwort as well as scattered individuals of whip nut sedge and New England blazing star. Maybe not all was lost! By the spring of
(Continued on page 4)

Figure 2a. Left, Freeman Avenue site after the 1995 bulldozing. Bob Laskowski is standing at center of photo east of the antenna structure. Photo by Stephen Young, 7 Dec 1995.

Figure 2b. Below, Freeman Avenue site in 2014 showing the reestablishment of the coastal plain graminoid/forb plant assemblage. Photo by Stephen Young, 22 Jul 2014.

just across the street at the site of Long Island's first airport which consisted of a single grass runway built in 1928 and dedicated by Amelia Earhart. The 1938 aerial photograph mentioned above shows 25 acres of open grassland surrounding the runway, a possible seed source for today's rare plants. The airport was eventually developed into the famous Islip International Speedway which opened in 1947 and featured the figure 8 track that was popular on ABC's Wide World of Sports, as well as the country's first demolition derby. The mid-1980s saw the racetrack site redeveloped into an industrial complex.



(Back from the Dead, continued from page 3)

Table 1. Noteworthy Plants at the Freeman Avenue Site, Islip, Suffolk Co.

The Freeman Avenue site is a region of high plant diversity and provides habitat for rare plant species. The following annotated plant list is arranged in order of rarity.

Orange Milkwort (*Polygala lutea*). (Fig. 3e). S1-Endangered. One of only two known populations in New York. In good years, this population includes 1000s of individuals making it, by far, the largest and highest quality occurrence in the state. This population represents the most northern occurrence of the species in North America.

Pyxie Moss, Pyxies (*Pyxidanthra barbulate*). (Fig. 3d). S1-Endangered. One of only two known populations in New York. This high quality population includes 1000s of individuals and represents the most northern occurrence of the species in North America. A second population at nearby Connetquot River State Park Preserve is small and reduced by succession. Pyxies are adapted to frequent fire and minimize heat damage by forming dense mats that hug the relatively cool ground.

Elliott's Goldenrod or Coastal Swamp Goldenrod (*Solidago latissimifolia*). S1-Endangered. One of only four populations known in New York and the 2nd best in terms of overall quality. This rare species is restricted to the Atlantic coastal plain and was long known by the name *Solidago elliotii*.

Whip Nut Sedge (*Scleria triglomerata*). S1-Threatened. This rare sedge is one of only nine populations known in New York and the 2nd best in terms of quality.

Primrose-leaved Violet (*Viola primulifolia* var. *primulifolia*). S2-Threatened. One of only 12 populations known in New York and the 5th best in terms of quality.

Showy Aster (*Eurybia spectabilis*). S2-Threatened. One of only 15 populations that occur mainly on Long Island.

Northern Blazing Star (*Liatris scariosa* var. *novae-angliae*). (Fig. 3c). S2-Threatened. One of only 19 populations that occur mainly on Long Island.

White-fringed Orchid (*Platanthera blephariglottis*). (Fig. 3a,b). Protected. Populations of this showy orchid have drastically declined on Long Island during the past 100 years largely due to habitat destruction by human activities.

Foxtail Bog-clubmoss (*Lycopodiella alopecuroides*). Protected. A coastal plain species whose distribution in New York is restricted to Long Island where it is near the northern limit of its range.

Slim-fruited Rush (*Juncus diffusissimus*). Native Pioneer. A southern species that recently migrated north to New York where it was first found in 2004 at the Freeman Avenue site.

1997 Chris observed a few clumps of pyxie moss and noted that the soil appeared to be favoring the reestablishment of the coastal plain graminoid/forb assemblage. It took only a few years before all of the rare plants were reestablished and since then the site has continued to be managed by the owners of the radio station as an early successional grassland/forb area where the rare plants continue to flourish (Fig. 2b).

New noteworthy plants continue to be found and monitored at the Freeman Avenue site. In 2004, a colony of slim-fruited rush (*Juncus diffusissimus*) was found in a moist open area along the northern edge of the site, the first report of the species in New York. A colony of white-fringed orchid (*Platanthera blephariglottis*) occurs on the western side of the property with other herbaceous flowering plants. Typically, a few dozen orchids flower each summer. The year 2018 was especially productive with 97 flowering individuals counted during a field visit by John Turner on 3 August 2018. Foxtail bog-clubmoss (*Lycopodiella alopecuroides*), a coastal plain species whose distribution in New York is restricted to Long Island, occurs in some wetter areas of the meadow.

A second, larger antenna was installed at the south end of the site about 12 years ago and the restoration of the area included the introduction of exotic wildflowers. Fortunately they have not persisted in any great numbers and the rare plants have not been negatively affected. The site is presently fenced and gated, so access to the rare plants is prohibited without permission.

Different styles of management over the years have resulted in too many shrubs coming into the area or too frequent mowing that did not allow the rare plants to fully grow. In 2018, there was no early mowing and some rare plants that had not been seen of late had recovered and were visible from the road. Maintaining the site as an open grassland/meadow provides a refuge for many species of native plants, butterflies, and other wildlife.

The Conservation Committee of LIBS has been working with the current owner of the property to consider a conservation easement to permanently protect the site and implement a mowing regime that promotes the protection of the rare plant species.



Plant Sightings

Compiled by Eric Lamont

The following species were reported and discussed at the 9 October 2018 LIBS membership meeting at Muttontown Preserve:

***Agalinis decemloba* [= *A. acuta*], sandplain agalinis.** (Orobanchaceae, the Broom-rape Family). (S1). Allan Lindberg reported he has not seen this species at Purcell Preserve (Hempstead Plains South), Nassau Co. since the 1990s but it still occurs at the Nassau Community College site (Hempstead Plains North). In New York, this species is only known from Nassau and Suffolk counties. *Agalinis decemloba* is one of only two federally endangered plants in New York.

***Aureolaria pedicularia*, fern-leaved false foxglove.** (Orobanchaceae, the Broom-rape Family). Dave Taft observed this showy species at the Brentwood oak brush plains in September 2018. This native species has declined on Long Island during the past few decades due to negative impacts by human activities. Fern-leaved false foxglove is a partial plant parasite, using the roots of oaks (*Quercus*) as its preferred host.

***Eutrochium dubium* [= *Eupatorium dubium*], coastal plain Joe Pye weed.** (Asteraceae, the Aster Family). Rare in New York. Observed by MaryLaura and Eric Lamont on 3 Oct 2018 at Wertheim National Wildlife Refuge, Suffolk Co. A small colony was found growing in thick organic muck on the west side of Carmens River. Lois Lindberg also reported *E. dubium* from Shu Swamp Preserve, Nassau Co.

***Kummerowia striata* [= *Lespedeza striata*], Japanese clover.** (Fabaceae, the Legume Family). Not Native. New record for Nassau Co. Found by Bob Wernerehl (Mass. State Botanist) during the LIBS/NYFA field trip to Hempstead Plains on 8 September 2018. This species was first reported from New York (Suffolk Co.) by Eric Lamont in 1992.

***Lilium superbum*, Turk's cap lily.** (Liliaceae, the Lily Family). Protected. Observed in September 2018 by Karen Blumer and Marilyn England at North Fork Preserve, Suffolk Co. The colony is located in Long Swamp on the west side of the entrance road.

***Salicornia bigelovii*, Bigelow's glasswort.** (Amaranthaceae, the Amaranth Family). (S2S3). Steve Young reported "many 1000s" of individuals at the salt marsh at Caumsett State Historic Park Preserve, Lloyd Neck, Suffolk Co., making this population and



Figure 1. *Tripidium ravennae* (Ravenna grass) and Eric Lamont at North Fork Preserve, Suffolk Co. Photo by MaryLaura Lamont, 10 Oct. 2018.

the one at Orient Beach State Park the two largest populations in New York.

***Spiranthes cernua* and *S. tuberosa*, ladies' tresses.** (Orchidaceae, the Orchid Family). Protected. For more than a decade, Dave Taft has been monitoring these two species at Connectquot River State Park Preserve, Suffolk Co.; in 2018 both species were observed at their usual localities. During the past few decades populations of *S. tuberosa* have declined on Long Island.

***Suaeda calceoliformis*, *S. linearis* (S1S2), and *S. maritima*, seablite.** (Amaranthaceae, the Amaranth Family). On 9 October 2018 Steve

Young observed these three species in the salt marsh at Caumsett State Historic Park Preserve, Lloyd Neck, Suffolk Co. Species of *Suaeda* can be difficult to identify; differences in mature seeds are a good way of distinguishing Long Island's four species.

***Tripidium ravennae*, Ravenna grass.** (Poaceae, the Grass Family). (Fig. 1). New record for Long Island. This tall (9–13 ft!), densely clumped ornamental grass from Eurasia was collected by Eric Lamont on 7 Oct 2018 in a successional old field at North Fork Preserve, Suffolk Co. The species was identified by Rob Soreng, US National Herbarium, Smithsonian Institution. Apparently, *T. ravennae* has been collected only once before in New York (New York Co., 20 Sep 2011, *Glenn & Harwood 13442*, BKL). It has relatively recently escaped cultivation in more than 13 US states, is expanding in some areas, and is considered invasive (Soreng, personal communication). It was described from Italy, is native around the Mediterranean Sea and eastward into middle Asia, and known in older literature as *Erianthus ravennae* and *Saccharum ravennae*.

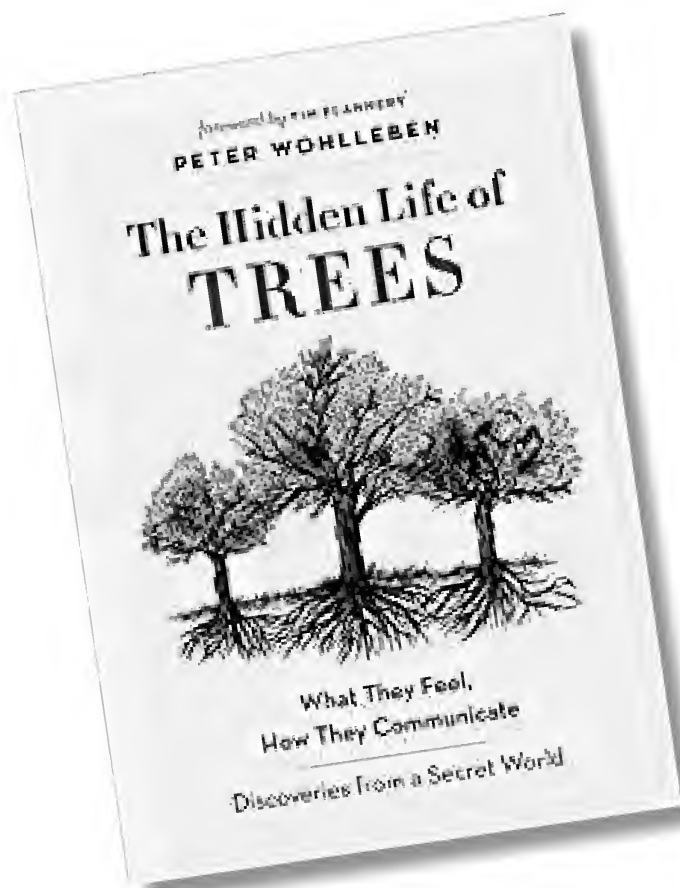
***Zizania aquatica* var. *aquatica*, southern wild rice.** (Poaceae, the Grass Family). Rare on Long Island. This conspicuous native grass was found along the brackish shore of Carmens River at Wertheim National Wildlife Refuge, Suffolk Co., by Eric Lamont on 3 Oct 2018. The colony is located on the west side of the river, just south of the railroad tracks. Historically, this species was more common on western Long Island but those populations have been destroyed by human activities; only four populations have been reported from Nassau and Suffolk counties. The seed from this grass was part of the diet of Native Americans of eastern North America.

BOOK REVIEW

The Hidden Life of Trees: What They Feel, How They Communicate – Discoveries from a Secret World.

By Peter Wohlleben. 2016. 288 pp. Greystone Books, Vancouver/Berkeley.

Reviewed by Marie George, St. John's University.



You won't look at trees the same way after reading Wohlleben's account of how they grow and interact with other each other and with other organisms. You will learn the wide variety of perils a tree must negotiate in order to live a full lifespan, as well as how the lives of communal trees, solitary trees, and city trees differ. You will learn a lot about ecology as well, e.g., how information about drought and insect attacks is communicated from one tree to another via a fungal network.

What is less satisfactory in the book are inadequately supported claims of tree sentience. Though it infuriates me when people whack at trees, it is not because I think that the tree feels pain but rather because I know that damage to the bark makes the tree susceptible to insect attacks. The fact that "leaf tissue sends out electrical signals, just as human tissue does when it is hurt," (p. 8) hardly shows that the tree feels pain. Evidence needs to be provided that a tree has something functionally equivalent to a nociceptor. Wohlleben thinks that the fact that trees react

differently to the saliva of different insect species shows that trees have a sense of taste. He never considers the possibility the trees are simply reacting to the different chemicals present in the saliva and not to any flavor they might have.

In the last chapter Wohlleben talks about the attitudes we ought to have towards forests. He maintains that forests are more than just a commodity, as they are a habitat for many species and are a source of wonder for us. He also tells us though that it is time to treat plants differently than we have in the past given their "emotional lives and needs" (p. 244)—something he has not adequately established.

In sum, *The Hidden Life of Trees* is a mixture of fascinating science (a single quaking aspen can cover hundreds of square yards) and flights of imagination (cracking roots may be cries of thirst). Engagingly written, it is a good read for anyone interested in plants.

FIELD TRIP

March 2, 2019 (Saturday) 10 AM

North Fork Preserve, Northville, Suffolk County, NY
Old Growth Forest

Joint trip with the North Shore Land Alliance

Trip leader: Eric Lamont

Trip limited to 12 people; registration required.

Nestled among the gentle hills of the Harbor Hill Moraine on Long Island's North Fork is an old growth forest that has not changed much in hundreds of years. The forest is full of swamps and steep slopes making the land unsuitable for farming. The original forest was cut down in the 1700s but the soil was never turned over and farmed. A second growth forest sprung up and today many of the old trees are 150–250 years old.

Participants will be introduced to the natural history of North Fork Preserve's old growth forest, freshwater wetlands, and other ecological communities.

To sign-up, email Eric Lamont and more information will be provided including the meeting place.

Email: elamont@optonline.net

UPCOMING PROGRAMS

January, February, and March 2019: No Meeting!

April 9, 2019*

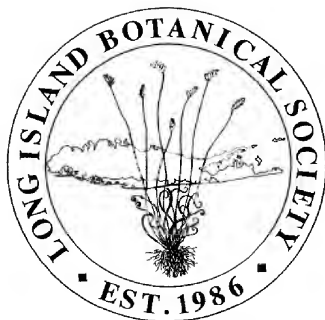
Tuesday, 7:30 PM

Marie George: “Are Plants Sentient?” Recently, a number of biologists have claimed that plants are sentient (able to perceive or feel things). For example, Daniel Chamovitz claims that the dodder sniffs out its host and Peter Wohlleben maintains that certain plants taste the saliva of insects chewing on them. A number of scientific papers appear to show that plants are capable of habituation and classical conditioning, which seems to indicate that they are sentient. Nevertheless, many biologists and philosophers remain skeptical. Marie is Professor of Philosophy at St. John’s University

and holds an MA in biology from Queens College, NY. Originally from California, and an avid hiker from an early age, Marie got interested in botany while in grad school upon finally noticing the fine details that differentiate plants. After getting tenure in the St. John’s philosophy department, she pursued her interest in plants while studying biology at Queens College. Marie is an organic gardener and sometimes teaches environmental ethics.

Location: Bill Paterson Nature Center
Muttontown Preserve, East Norwich

* Refreshments and informal talk begin at 7:30 p.m. Formal meeting starts at 8:00 p.m.
Directions to Muttontown: 516-354-6506



Long Island Botanical Society

Vol. 29 No. 2

The Quarterly Newsletter

Spring 2019

Three Fossil Fruits, New to the Magothy Formation (Upper Cretaceous) of Long Island

Andrew M. Greller¹, Cesar Castillo¹, Michael Goudket², and Marie George³

¹ Department of Biology, Queens College, Flushing, New York 11367

² Stirrup Path, Seaford, NY 11783

³ Department of Philosophy, St. John's University, Jamaica, NY 11439



Figure 1. Cretaceous cliffs at Caumsett State Park, Lloyd Neck, Suffolk Co., N.Y.



Figure 2. A section of Cretaceous cliffs that shows a stratum of red sand, containing limonite flat stones (Caumsett State Park, L.I., N.Y.).

Abstract. We collected three fossilized fruits that are new to the Magothy Formation, and new to science. They are from two Long Island, New York, sites. These fossils are named *Carpolithus caumsettensis* (Lloyd Neck site), a compression fossil; and *Carpolithus slotnickii* (Glen Cove site) and *Carpolithus elongata* (Lloyd Neck site). Both *Carpolithus slotnickii* and *C. elongata* are casts of limonite. *Carpolithus caumsettensis* is referable to the Araceae: Aroideae; *C. slotnickii* is referable to the Rosaceae: Amygdaloideae; and *C. elongata* is comparable to a species in the Passifloraceae (*Passiflora tarminiana*).

Introduction. Hollick (1906) listed 13 locations on Long Island where he collected fossil plants. In most of the locations, Hollick indicated that he collected specimens from "morainal material." Only a few of the 13 sites have been preserved and even fewer still have "clays in place." The Glen Cove collecting site, designated by Hollick as "clays in place," has been preserved in Garvies Point Museum and Preserve. The Lloyd Neck site (Caumsett State Park), cited by Hollick as bearing fossils in morainal material, has subsequently been shown to bear fossils in strata on cliffs that expose the Magothy Formation (Fig. 1, 2).

(Continued on page 11)

Long Island Botanical Society

Founded: 1986 • Incorporated: 1989

The Long Island Botanical Society is dedicated to the promotion of field botany and a greater understanding of the plants that grow wild on Long Island, New York.

Visit the Society's Web site
www.libotanical.org

Executive Board

President

Eric Lamont 631-722-5542

elamont@optonline.net

Vice President

Andrew Greller agreller2@optonline.net

Treasurer

Carol Johnston

johnfjohnston2@optonline.net

Recording Secretary

Sue Avery suea483@gmail.com

Corresponding Secretary

Rich Kelly vze2dxmi1@verizon.net

Committee Chairpersons

Flora

Eric Lamont elamont@optonline.net

Andrew Greller agreller2@optonline.net

Field Trips

Allan Lindberg ajlindberg@optonline.net

Programs

Rich Kelly vze2dxmi1@verizon.net

Membership

Lois Lindberg lalindberg3@optonline.net

Conservation

Bill Titus dottie11560@hotmail.com

John Turner redknot2@verizon.net

Education

MaryLaura Lamont
woodpink59@gmail.com

Hospitality

Kathleen Gaffney kg73@cornell.edu

Dorothy Titus dottie11560@hotmail.com

Newsletter Editor

Eric Lamont
elamont@optonline.net

with special thanks to

Marie George

Webmaster

Donald House libswab@yahoo.com

Society News

LIBS gratefully acknowledges donors. The society would not exist without the support of its members and LIBS takes this opportunity to express sincere appreciation to the following members who recently gave very generous year-end donations:

George Andrek
Jim Ash
Sue Avery
Susan and Jim Benson
Skip and Jane Blanchard
Regina Conlon
Barbara Conolly
Margaret Conover
Elaine Fernald
Sue and Ken Feustel
Thomas Fiore
Douglas Futuyma
Kathleen Gaffney
Marie George
Glover Perennials
April Gonzales
Andrew Greller
Louise Harrison
David Heerwagen
John Heidecker
Marian Hubbard
Ann Johnson

Marilyn Jordan
Rich Kelly
David Kennedy
Kathy Krause
David Kunstler
Lois and Al Lindberg
Albert Messina
Bill Miller
Margo Myles
John Potente
Lesly Reichel
Andrew Sabin Family Foundation
Joanne Schlegel
Laura Schwanof
Richard Stalter
Dava Stravinsky
Lenore Swenson
Lisa Synoradzki
Kristine Wallstrom
Ray Welch
Steve Young

LIBS Life Members. One way members support the society is by becoming a Life Member. Such support keeps the society vibrant and able to achieve its goals. Please show your support of LIBS by becoming a Life Member. Current Life Members of LIBS:

Lillian Ball
Victoria Bustamante
Leslie Clarke
Barbara H. Conolly
Leon Dalva
Robert DeCandido
Wei Fang
Tom Fiore
Judith M. Fitzgerald
Kathleen Gaffney
April Gonzales
Andrew Greller
David Kunstler
Eric and MaryLaura Lamont
James C. Lendemer

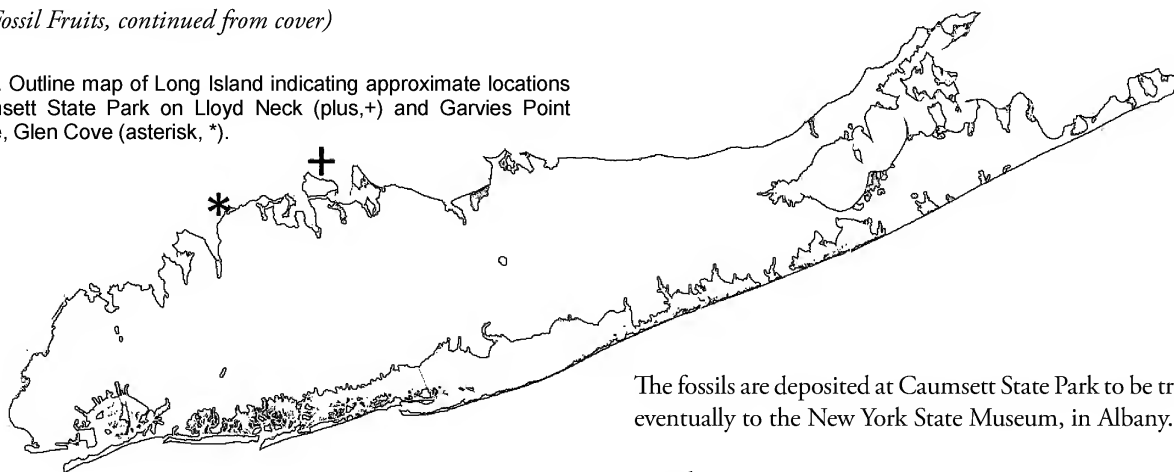
Lois and Allan Lindberg
Carrie Ann Lindstadt-Iurka
Mary Maran
Grace Markman
Bill Miller
Gerry Moore
Larry Penny
Elizabeth Pessala
Planting Fields Foundation
John Potente
Andrew Sabin Family Foundation
Vincent Simeone
Dava Stravinsky
Lenore Swenson
Robert Zaremba

LIBS Membership Renewals

for 2019 are past-due. If you have not yet renewed, please mail your dues to: Carol Johnston, LIBS Treasurer, 347 Duck Pond Road, Locust Valley, NY 11560.
\$25 Individual, \$30 Family, \$250 Life Member

(Three Fossil Fruits, continued from cover)

Figure 3. Outline map of Long Island indicating approximate locations of Caumsett State Park on Lloyd Neck (plus, +) and Garvies Point Preserve, Glen Cove (asterisk, *).



Location. Map (Fig. 3) shows Long Island with the locations of Caumsett State Park, in Lloyd Neck, and Garvies Point Preserve, in Glen Cove, indicated.

Stratification of the Magothy Formation: We are not aware of any formal classification of the strata of the Magothy Formation that are present at the surface of Long Island. Nevertheless, classification of the Magothy Formation has been accomplished for the coastal plain of New Jersey (Magothy Formation, Rutgers Univ., Dept. of Earth and Planetary Sciences); it has been designated as Upper Cretaceous, middle and lower Santonian, in age (USGS, Magothy Formation). Everhard (2004) assigned an age of 85.5-86.3 MYA to the Santonian deposits. The following strata (listed in order of decreasing age) have been designated by Rutgers University for the New Jersey Magothy Formation: 1. Sayreville Sand, 2. Old Bridge Sand, 3. South Amboy Fire Clay, 4. Amboy Stoneware Clay, 5. Morgan Beds and, 6. Cliffwood Beds. Because commercially important light tan clay beds are present at sea level in both Glen Cove and Lloyd Neck, it may be that the Amboy Stoneware Clay stratum is represented there. Above these basal strata, and younger in age, are white-sand and red clay beds that bear plant fossils in limonite flat stones. This stratum may represent the Morgan Beds of NJ. Gravel beds that have as yet yielded no fossils are also present; these dip into the ground west of the putative Morgan Bed and may represent the Cliffwood Beds that have been removed by glacial scouring from above the local Morgan Bed.

Materials and Methods. Fossilized plant material was examined on the beaches at Glen Cove and Lloyd Neck. Specimens were wrapped in newspaper, labeled with location and collection date, and subsequently examined at our laboratory at Queens College. Photographs were taken with rulers to indicate size. Attempts were made to match the fossils to illustrations in Hollick (1906); or failing that, with nearest living relatives. At the suggestion of Dr. Patrick Herendeen, a morphotype name, in this case *Carpolithus*, has been chosen to refer to these three specimens, because conclusive evidence of their taxonomic affinities has not been established. *Carpolithus* was used by Hollick to refer to all of his unidentified but distinctive fruits.

The fossils are deposited at Caumsett State Park to be transferred eventually to the New York State Museum, in Albany.

Results.

Carpolithus caumsettensis sp. nov., (Plates 1, 2, 3) was collected in 2015 at the Lloyd Neck site. It is a compression fossil, preserved in limonite; both halves of the compression are illustrated in Figure 1; they measure 3.7 x 3.5 cm and 4.0 x 3.3 cm. Compression is on a vertical plane. The specimen is incomplete, with a small portion of the top missing. Close examination revealed a small thin-walled fruit that had a seed enclosed (Plate 2). A dark glossy surface can be seen in many places on the specimen. In these glassy areas, geometric lines intersect, as if liquid was expressed, then hardened, and subsequently cracked. The small fruits, therefore, appear to have been fleshy; and they are aggregated into a short spike, the infructescence. The infructescence of *Carpolithus caumsettensis* was preserved with a relatively long stalk that does not appear to be vascularized; it may be considered a peduncle.

Early attempts to class it with the Butomaceae were rejected. Rather, the aggregation resembles the spadix of a number of local members of the Araceae (aroid family). A possible spathe appears in one of the halves of the compression (Plate 1, left); it arises from the peduncle approximately 1 cm below the base of the putative spadix. Among the living genera with fleshy, often red, fruits on a spadix are: *Arisaema triphyllum*, *Peltandra* (especially *Peltandra sagittifolius*), *Symplocarpus*, *Calla*, *Orontium* and the exotic escape, *Arum*. *Arisaema triphyllum*, *Peltandra sagittifolius* and *Arum italicum* all produce a spadix borne on a long, erect peduncle. The compressed specimen of *Carpolithus caumsettensis* shows an infructescence that is nearly spherical in outline. This feature is unlike that of *Arum italicum*, which has a relatively long and narrow infructescence. It is therefore illustrated side by side with a Long Island specimen of an *Arisaema triphyllum* infructescence (Plate 3).

Carpolithus slotnickii sp. nov., (G[arvies] P[oint] 180808-5; Plate 4) was collected in 2018 at the Glen Cove site. It is named in honor of its finder, Carl Slotnick, a local resident. The specimen is a cast, in limonite, which measures approximately 5.5 x 5.5 cm. The fossil is flattened on a vertical plane. One side appears to be a bisected, open fruit. At the center of the specimen is a flat, nearly smooth, ovoid structure resembling

(Continued on page 12)

(Three Fossil Fruits, continued from page 11)

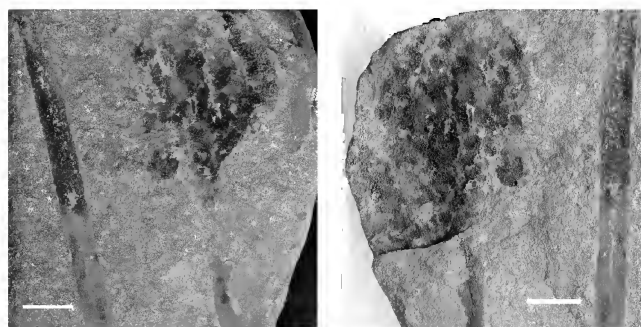


Plate 1. *Carpolithus caumsettensis* sp. nov. (CAUM 150526-7a,b), showing both halves of the limonite compression fossil. Scale= 1 cm)

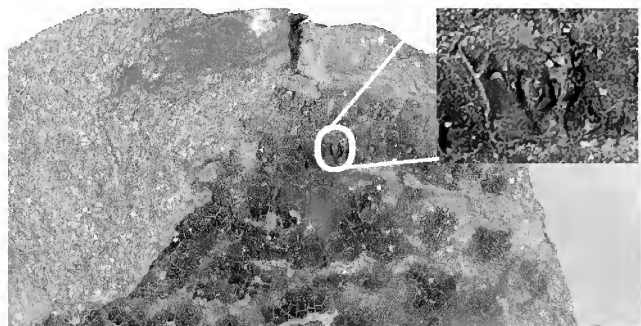


Plate 2. *Carpolithus caumsettensis* sp. nov. (CAUM 150526-7a,b), counterpart with an enlarged portion that shows a small unit of the limonite infructescence, one that contains a seed.

a seed. The seed appears to be whole; and the plane of bisection is close to medial on a coronal/frontal plane. Immediately surrounding the putative seed is a thick ring that shows radial banding. Peripheral to that band there is an amorphous ring that appears to contain veins with some attached flesh. The outer wall of this entire structure is very thin, serving only as a border. We interpret this specimen as a single, fleshy fruit, although we have not been able to identify a pedicel scar. A single-seeded fleshy fruit is a drupe. Among the drupes of living angiosperms, we were drawn to a comparison with a small plum, of which there are a few species in eastern North America (*Prunus* spp.). When we made a vertical, coronal, nearly medial section of the fruit of a commercial Cherry Plum (*Prunus cerasifera* variety) we were struck by the close similarity of our specimen in general morphology, seed form, endocarp and mesocarp anatomy. Applying the terminology of fruit morphology, we could describe the specimen as follows (from the center): seed, endocarp, mesocarp, exocarp. If we were comparing it to a nectarine (*Prunus persica*) we could use the terms: stone, seed shell, flesh, skin.

Carpolithus slotnickii and the Cherry Plum are illustrated, side by side, in Plate 4.

Carpolithus elongata sp. nov., (CAUM 180817-1; Plate 5, left; Plate 6) was collected in 2018 on the beach at Caumsett State Park, our Lloyd Neck site. It is a cast which measures approximately 4 cm x 1 cm, at the edge of a limonite flat stone. The fossil is elongated and its dark outer portion is fragmented

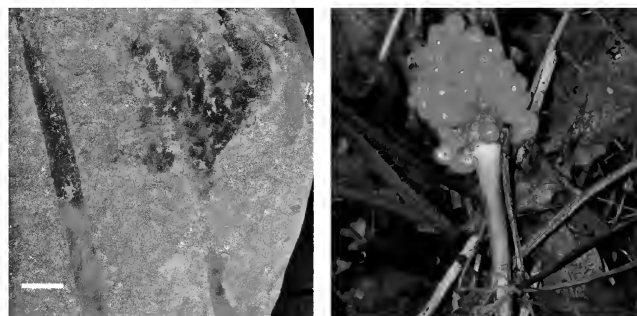


Plate 3. *Carpolithus caumsettensis* sp. nov. (CAUM 150526-7a,b; left) and an *Arisaema triphyllum* infructescence, for comparison (right).



Plate 4. *Carpolithus slotnickii* sp. nov. (GP 180808-5; left); compared with a living fruit of *Prunus* cf. *cerasifera* (rt). Scale units = mm.

into a few segments. A small number of spherical objects sit at the center of this narrow specimen. The spherical objects are smooth in outline, and somewhat irregularly shaped. We can speculate that each sphere was fleshy. So the whole specimen can be interpreted as a group of fleshy seeds that are surrounded by a dark, fragmented wall, which is a few mm thick. We interpret this specimen as a berry. Among the berries of living angiosperms, we were drawn to a comparison with *Punica granatum*, the pomegranate. Here we see irregularly spherical, fleshy seeds contained in a leathery wall. The spherical shape and relatively large size of a pomegranate, however, are features not comparable to this small, elongate fruit. *Passiflora* was considered next, because its fruit also comprises a group of fleshy seeds that are enclosed in a relatively thick wall. A pictorial review of fruits of *Passiflora* species showed a remarkable similarity of our Cretaceous fruit to *Passiflora tarminiana*, the Taxo. *Passiflora t.* is a fruit indigenous to South America. A possible pedicel scar is indicated by a white square (Plate 6). Because no remains of a style can be identified, we cannot be absolutely certain this specimen is a fruit. Nevertheless, lacking any better interpretation, we are proposing that it be considered a berry, and comparing it with the *Passiflora* berry.

In Plate 5, *Carpolithus elongata* (left) and *Passiflora tarminiana* (right) are illustrated, side by side, (with permission for the photo of *Passiflora tarminiana* from: Leblanc, Laurence S., In <http://www.globehopnow.com/research-interests.html>; cf. Heenan and Sykes 2003; Segalen 2010).

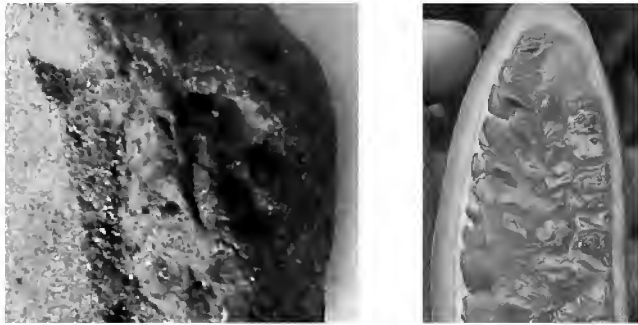


Plate 5. *Carpolithus elongata* sp. nov. (CAUM 180817-1; left); compared with a hand-held specimen of *Passiflora tarminiana* (rt). Scale is 1 cm.

Discussion. Hollick (1906) illustrated and briefly discussed a number of fossil fruits. *Tricarpellites striatus*, abundant in the Amboy Clays, but collected north of New Jersey only on Martha's Vineyard, is present as a cast in Glen Cove (Greller unpubl.). Ten species of *Carpolithus* are figured by Hollick (1906, Pl. VII). Four of these fossil fruits are distinctive enough to be assigned species names: *Carpolithus euonymoides*, *C. hirsutus*, *C. vaccinioides*, and *C. floribundus*. Hollick figured, as well, two species of "aments;" these he named *Populus* sp. and *Myrica* sp. One problematic Hollick genus is *Williamsonia*, with two species. These specimens may be infructescences of *Magnolia*, which is perhaps the most abundant angiospermous leaf fossil at Lloyd Neck.

The senior author and his colleague previously identified to genus, two fossil fruits from the Magothy Formation, Upper Cretaceous deposits of Long Island: "Rosa," and *Alatacarpus* gen. et sp. nov., aff. *Dodonaea* (Greller 2008; Greller and Goudket 2010).

Scott and Barghoorn (1957) identified fossil dicotyledonous fruits from the Upper Cretaceous Raritan formation at Kreischerville, New York (U.S. Geological Survey, Raritan Fm) "as the endocarps of *Phytocrene* Wall. (tribe Phytocreneae, Icacinaceae). Modern species of *Phytocrene* are climbing vines from tropical Asia and Africa. The Raritan species described as *P. microcarpa* n. sp. is the first Cretaceous record of the genus, which has also been identified from fossil leaves of Eocene age in California. The fossil endocarps of *P. microcarpa* constitute one of the common Mesozoic occurrences of reproductive structures referable to a modern genus of the angiosperms.

Bogner et al (2005) described a fossilized aroid, *Albertarum pueri* from Late Cretaceous (Late Campanian) age in southern Alberta, Canada. It resembles a *Symplocarpus* (Orontoideae subfamily). *Carpolithus caumsettensis*, described in the present paper, is more likely related to *Arisaema* or *Peltandra*, in the Aroideae sub-family.

A leaf assigned to *Amelanchier* is the only member of the Rosaceae that Hollick (1906) included in the Magothy flora of the northeastern U.S. The Bennington/Durso fossil of a putative rose hip, which I referred to as "Rosa," represents the first possibly rosaceous fruit (Greller 2008). *Carpolithus slotnickii*, described in the present paper, may represent the

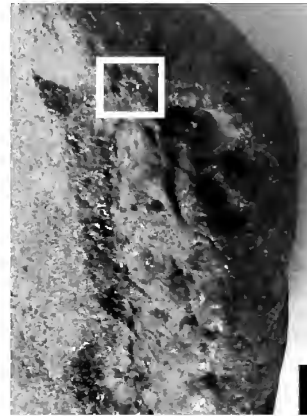


Plate 6. *Carpolithus elongata* sp. nov. (CAUM 180817-1. Possible pedicel scar is outlined in the white box. Scale is 1 cm.

first member of the Rosaceae: Amygdaloidae in the Magothy Flora of the northeast.

Carpolithus elongata is an enigmatic specimen. Possibly, it is the first member of Passifloraceae described for the Magothy Formation of the northeastern U.S.

Conclusions.

Two of Hollick's (1906) sites on Long Island have persisted to yield Cretaceous plant fossils; these are Glen Cove and Lloyd Neck. In the past decade, the Lloyd Neck site has yielded a few fossil fruits, "Rosa", (cf. Bennington [and Durso]); and *Alatacarpus* gen. et sp. nov., aff. *Dodonaea* (Greller 2008; Greller and Goudket 2010). The three fossil fruits described in the present paper add to the diversity of Late Cretaceous (Magothy Fm) angiosperm fruits. These resemble some living genera. Perhaps this is not surprising, in light of the fact that Hollick named many leaf fossils in the Magothy Fm of coastal New England after modern genera. Subsequent research on their identities, using modern techniques of leaf anatomical analysis, supports Hollick's assignment of modern names (Castillo and Greller 2010).

Acknowledgements.

The authors acknowledge with gratitude the help provided this study by: Leonard J. Krauss, Jr., Superintendent of Caumsett State Park; Rose Chin; Carl Slotnick; Donald Hecht; and Katie Paccione. We thank Caleb Bomske, Pensacola Christian College, and Linda Kukol, for sending photographs to aid in identification. Special thanks go to Patrick Herendeen, Chicago Botanical Garden, for a critical review of the manuscript and helpful suggestions. We thank the State of New York, Department of Parks, Long Island Office, for continuing permission to collect fossils at Caumsett SHP.

Literature Cited

- BENNINGTON, J.B. https://people.hofstra.edu/J_B_Bennington/research/cretaceous/kplantfossils.html. Accessed August 18, 2018.
- BOGNER, J., HOFFMAN, G.L., AND AULENBACH, K.R. 2005. A fossilized aroid infructescence, *Albertarum pueri* gen. nov. et sp. nov., of the Late Cretaceous (Late Campanian) age from the Horseshoe Canyon Formation of southern Alberta, Canada. *Canadian Journal of Botany* 83: 591-598.
- CASTILLO, C.A. AND GRELLER, A. 2010. [Poster] A Description of the Leaf Architecture of Three Fossil Leaves of the Magothy Formation of Lloyd Neck, Long Island, Poster Number 58. Sigma Xi Annual Science Poster Display, New Science Building, Queens College, CUNY, March 18, 2010.

(Continued on page 14)

(Three Fossil Fruits, continued from page 13)

CAUMSETT STATE PARK, Lloyd Neck, NY. <https://www.google.com/search>. Accessed January 4, 2018.

GRELLER, A.M. 2008. Identities of Three Plant Fossils from the Upper Cretaceous of Lloyd Neck, Long Island. Long Island Botanical Society Newsletter 18(2): 17; 19-20.

GRELLER, A.M. AND GOUDKET, M. 2010. A *Dodonaea* (Sapindaceae: *Dodonaeoideae*)-like capsule from the Upper Cretaceous of Long Island (Magothy Fm., Santonian Age). Long Island Botanical Society Newsletter 20. 25, 27-28, 30.

HOLICK, A. 1906. The Cretaceous Flora of Southern New York and New England. U.S. Geol. Survey Vol. 50, 219 pp.

LEBLANC, LAURENCE S. *Passiflora tarminiana* [photograph] <http://www.globehopnow.com/research-interests.html>. Accessed January 3, 2019.

MAGOTHY FORMATION, Rutgers University Department of Earth and Planetary Sciences.mht. <https://eps.rutgers.edu/centers-institutes/rutgers-core-repository/nj-coastal-plain/magothy-formation>. Accessed August 17, 2018.

U.S. GEOLOGICAL SURVEY, Magothy Formation. <https://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=NJKmg%3B1>. Accessed January 4, 2019.

U.S. GEOLOGICAL SURVEY, Raritan Formation. <https://mrdata.usgs.gov/geology/state/sgmc-unit.php?unit=NJKr%3B1>. Accessed January 4, 2019.

GARVIES POINT MUSEUM AND PRESERVE, Glen Cove, NY. <<http://www.garviespointmuseum.com/preserve.php>>. Accessed January 4, 2019.

SCOTT, R.A. AND BARGHOORN, E.S. 1957. A new species of *Icacina*, based on Cretaceous fruits from Kreisherville, N.Y. *The Paleobotanist* 6(1): 25-28.



FIELD TRIPS

April 6, 2019 (Saturday) 10 AM

William Floyd Estate, Suffolk County, NY

Trip Leader: MaryLaura Lamont

Email: woodpink59@gmail.com (in case of bad weather)

Explore the natural and cultural history of the old Floyd Estate on Moriches Bay. The 613 acres of property still has some record size trees that are among the largest of their kind, and the fields and woodlands are almost as they were when the Floyd/Nichols family donated the property to the National Park Service in 1976. We will walk through a variety of habitats and will discuss botany, cultural plantings, and a bit of ornithology too.

Directions to the Estate in Mastic Beach: (don't use GPS as typically it takes people to the wrong gates!) Take LIE or Sunrise Hwy to William Floyd Parkway and head south. You will come to the large intersection of Montauk Hwy and WFParkway. Continue south on Floyd Parkway for app. another 3 miles. When you see the CVS Pharmacy on the left hand side of the road turn left at that light. This is Havenwood Drive, which quickly merges into Neighborhood Rd. Continue on Neighborhood Rd through Mastic Beach for 2 miles. Road ends on Park Drive, where you turn left. Go a few hundred yards down this road and find the large Entrance Gates on the right hand side of the road. Park in the lot at the end of the entrance road.

May 25, 2019 (SATURDAY) 10:00 AM

Stillwell Woods Preserve, South Woods Road, Woodbury, Nassau County, NY, Oak Woodlands

Trip Leader: Al Lindberg

Email: ajlindberg@optonline.net

Stillwell Woods is a 270 acre preserve/multi-use area with several interesting habitats, which include managed grassland, old field, juniper and oak woodlands. On this trip we will

concentrate on the oak woodlands, which are unique in Nassau County's preserve system. Occurring on the County's eastern border within the hills and ravines of the Harbor Hill Terminal Moraine, the sandy soils and flora present a habitat more typical of eastern Long Island's pine/oak barrens.

Stillwell Woods is located next to 72 South Woods Road, behind the Town of Oyster Bay recreational fields, in Woodbury. Meet at the parking area at the farthest end from the South Woods Rd. entrance, past the recreation fields.

Please contact the trip leader to register in advance for this walk and in case we need to cancel due to weather. Insect repellent for ticks, sunscreen, water and a snack are recommended.

June 22, 2019 (SATURDAY) 10 AM

Planting Fields Arboretum State Historic Park, Upper Brookville, Nassau County, NY

Fields and Woodlands

Trip Leader: Rich Kelly

Email: vze2dxmi1@verizon.net

Have you explored beyond the formal gardens or the greenhouse? Planting Fields is over 400 acres, and has much natural habitat that we will explore. There are many fields and edges, as well as deciduous woods. There is an extensive area of woodland that is dominated by Mt. Laurel and other ericaceous plants. This is also the time of year when the most diversity of plants in flower is to be expected in our area.

Meet at the west end of the main parking lot. There is an entrance fee unless you have an Empire Pass. Please contact trip leader in advance in case we need to postpone or cancel due to weather. Insect repellent for ticks, sunscreen, water, and a snack are recommended.

SAVE THE SEPTEMBER DATE: SMARTWEED SAVVY

Sunday, September 22, 2019, Alley Pond Park, Queens, NY, Leader: Daniel Atha

Plant Enthusiasts Meet for Coastal Rare Plant Meeting, September, 2018

by Steve Young, Chief Botanist, NY Natural Heritage Program

In the past I have updated the rankings and taxonomy of New York's rare plants almost every year but for a hiatus in the early 2010s because of funding. Before making the annual changes, I have had a rare plant meeting in Albany and invited botanists from around the state to meet to go over the rankings. This year I decided to change the procedures and have regional meetings so more people could attend them. My first regional meeting was held on September 7th on Long Island to discuss rare plants from the coastal plain from Fishers Island to Staten Island. The Long Island Invasive Plant Management Area (LIISMA) was gracious enough to let us use a room in the building where their office is in Brentwood, a nice central location, and the meeting was attended by twelve people for a four-hour meeting that included a lunch break to look at the foundation plantings of the Long Island Native Plant Initiative (LINPI). Attending was Steve Young, Eric Lamont, Daniel Atha, Dave Taft, Vicki Bustamante, Juliana Quant, Zihao Wang, Don Recklies, Polly Weigand, Steve Pearson, Luke Gervase, and Caroline

Schnabl. Our meeting focused on the plants of the review and watch lists that grow principally on the coastal plain. We finished going over them right on time and recommended the following changes for the review list species (Table 1).

From our discussion of these species we realized we needed more field work and herbarium work to obtain better data on many of these species. In future newsletter articles I will write about how to identify some of the more difficult species and varieties so more people can look for them.

Many of the watch list species that were recommended for the active list were species from the coastal plain ponds. That is because the ponds are now under much more threat from invasive species and hydrology problems than they were when the species were originally ranked.

I would like to thank all those who attended. I plan to make this an annual meeting and look forward to next year. I think everyone enjoyed getting together and talking about rare plants!

Table 1. Recommended changes in rarity rank of some plants that grow principally on the coastal plain of Long Island, New York.

Scientific Name	Common Name	Decisions from 2018 LI Meeting
<i>Andropogon glomeratus</i> var. <i>glomeratus</i>	Bushy Blue Stem	S3 Watch List
<i>Cuscuta gronovii</i> var. <i>latiflora</i>	Broad-flowered Common Dodder	S3 Watch list
<i>Cyperus esculentus</i> var. <i>macrostachyus</i>	Large Yellow Nut Sedge	S1 Active List
<i>Dichanthelium commonsianum</i>	Commons' Rosette Grass	SH Active List
<i>Dichanthelium lucidum</i>	Shining Rosette Grass	SH Active List
<i>Elymus virginicus</i> var. <i>halophilus</i>	Coastal Virginia Wild Rye	SH Active List
<i>Eutrochium dubium</i>	Coastal Plain Joe-Pye-weed	S3 Watch List
<i>Glyceria obtusa</i>	Coastal Manna Grass	S2? Active List
<i>Lycopodiella alopecuroides</i>	Fox-Tail Bog-clubmoss	S2? Active List
<i>Piptochaetium avenaceum</i>	Black-Seeded Spear Grass	S1S2 Active List
<i>Schizachyrium littorale</i>	Dune Bluestem	S3 Watch list
<i>Sisyrinchium fuscum</i>	Coastal Plain Blue-eyed-grass	S1? Active List
<i>Spiranthes tuberosa</i>	Little Ladies'-tresses	S2 Active List
<i>Zostera marina</i>	Eel-grass	S3 Watch list

UPCOMING PROGRAMS

April 9, 2019* **Tuesday, 7:30 PM**

Marie George: "Are Plants Sentient?" Recently, a number of biologists have claimed that plants are sentient (able to perceive or feel things). For example, Daniel Chamovitz claims that the dodder sniffs out its host, but many biologists and philosophers remain skeptical. Marie is Professor of Philosophy at St. John's University and holds a PhD in Philosophy and a MA in Biology.

May 14, 2019* **Tuesday, 7:30 PM**

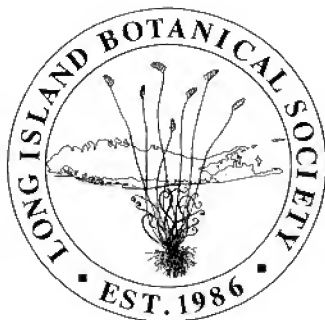
Andrew Leslie: "Late Cretaceous Plant Fossils from Garvies Point, Long Island." Collections were made and analyzed of Late Cretaceous clays and lignites from Garvies Point, Long Island, which contained a variety of micro and meso scale fossils. These include several kinds of charcoalfied fossil flowers, although angiosperm fossils are rare in general. The most

common fossils in the assemblage are megaspores of lycopsids and Marsiliaceous water ferns, which suggest a wet habitat with numerous aquatic pteridophytes. Andrew is a paleobotanist at Brown University who specializes in gymnosperms. Most of his work has focused on understanding the evolution of conifer reproductive structures by combining data from the fossil record with studies of how cones function in living species. In addition to working on fossils from New England, he has also collected fossils in Mongolia, Patagonia, and New Caledonia.

June 11, 2019 **Tuesday, 5:30 PM**
(please note early start time for the barbecue)

Annual Barbecue: The annual barbecue, featuring Chef Eric's made-to-order hot dogs and hamburgers. Salads, deviled eggs, desserts, etc. gladly accepted. The traditional location - on the green behind the Muttontown Preserve meeting house.

* All programs held at Bill Paterson Nature Center, Muttontown Preserve, East Norwich
Refreshments and informal talk begin at 7:30 p.m. Formal meeting starts at 8:00 p.m.
Directions to Muttontown: 516-354-6506



Long Island Botanical Society

Vol. 29 No. 3

The Quarterly Newsletter

Summer 2019

***Osmanthus heterophyllus* (Oleaceae) a New Invasive Species in New York**

Victoria Bustamante, Long Island Botanical Society, vbustamante1@optonline.net
and

Kate Estuye, Henry Garneau, Henry Johnston, Mikela Junemann, Molly Mamay
Student Interns, East Hampton High School, NY

Introduction:

It was on 1 November 2015, while botanizing with Matt Stedman, that two seedlings of *Osmanthus heterophyllus* (G. Don) P.S. Green were first observed at Big Reed woods in Montauk County Park. In the following three years, more seedlings were found at Big Reed woods as well as at other Montauk sites including Culloden Point Preserve¹, Shadmoor State Park², and along East Lake Drive. It was this increase in numbers and additional locations that initiated our survey of an approximately one-acre site, where the first two seedlings were found. The investigating team was comprised of five East Hampton High School student interns led by several Third House Nature Center members.

Plant description:

Osmanthus heterophyllus, commonly called false holly, is a

bushy upright evergreen shrub native to Japan and Taiwan and grows to approximately 8-12 feet (~2.5-3.5 meters). There are a number of favored cultivars such as 'Gulf Tide', 'Goshiki', and 'Variegatus'. There are also other species of *Osmanthus* used in the landscape and nursery trade, particularly *Osmanthus fortunei*. The late fall-early winter little white flowers, although inconspicuous, are highly fragrant. Curiously, references state *O. heterophyllus* as being dioecious, however, the two mature specimens in Shadmoor

were observed to be bisexual. *Osmanthus* is in the family Oleaceae, the same family as the notorious invasive genus, *Ligustrum*. *Osmanthus heterophyllus* is superficially similar to American holly, *Ilex opaca* (Fig. 1).

Osmanthus heterophyllus has become increasingly popular over the
(Continued on page 19)

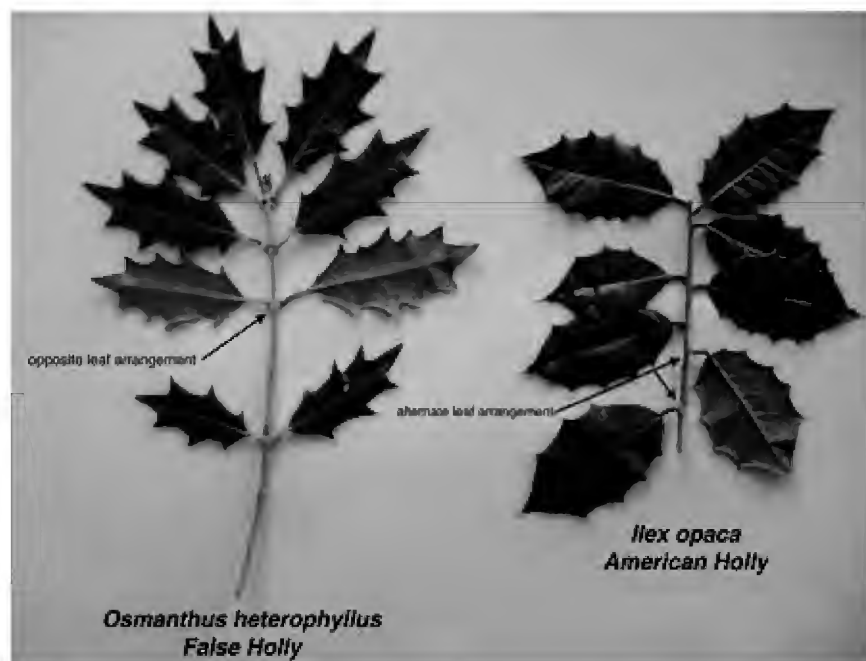


Figure 1. Leaf comparison of *Osmanthus heterophyllus* versus *Ilex opaca*.

¹ Culloden Point Preserve-East Hampton Town parkland, 190 acres, predominantly a coastal oak-hickory forest.

² Shadmoor State Preserve-New York State Park, 99 acres, predominantly a maritime coastal shrub land.

Long Island Botanical Society

Founded: 1986 • Incorporated: 1989

The Long Island Botanical Society is dedicated to the promotion of field botany and a greater understanding of the plants that grow wild on Long Island, New York.

Visit the Society's Web site
www.libotanical.org

Executive Board

President

Eric Lamont 631-722-5542

elamont@optonline.net

Vice President

Andrew Greller agreller2@optonline.net

Treasurer

Carol Johnston

johnfjohnston2@optonline.net

Recording Secretary

Sue Avery suea483@gmail.com

Corresponding Secretary

Rich Kelly vze2dxmi1@verizon.net

Committee Chairpersons

Flora

Eric Lamont elamont@optonline.net

Andrew Greller agreller2@optonline.net

Field Trips

Allan Lindberg ajlindberg@optonline.net

Programs

Rich Kelly vze2dxmi1@verizon.net

Membership

Lois Lindberg lalindberg3@optonline.net

Conservation

Bill Titus dottie11560@hotmail.com

John Turner redknot2@verizon.net

Education

MaryLaura Lamont
woodpink59@gmail.com

Hospitality

Kathleen Gaffney kg73@cornell.edu

Dorothy Titus dottie11560@hotmail.com

Newsletter Editor

Eric Lamont
elamont@optonline.net

with special thanks to

Marie George

Webmaster

Donald House libswab@yahoo.com

Society News

LIBS thanks Wei Fang, Carole & Richard Ryder and Mary Rose Ruffini for their generous donations, and **Kim Berlin** for becoming the newest LIBS Life Member!

LIBS applies for \$20,000 grant from the William E. and Maude S. Pritchard Charitable Trust to help publish *Atlas of the Flora of Long Island, New York*. Despite the rich diversity of the plants on Long Island, the first and only *Flora of Long Island* was published in 1899 and has not been updated since. If awarded, this grant will be used to retain the services of a taxonomic botanist to update the taxonomy and nomenclature of difficult species groups in the *Atlas*.

LIBS tries to save Moores Woods. On 12 June 2019, Steve Young and Eric Lamont met at Moores Woods with representatives from the DEC and the Village of Greenport to document the occurrence of *Carex debilis* var. *debilis* within the proposed development site of a railroad ride through the rare Coastal Oak Hickory Forest. In New York this rare plant is restricted to Long Island and the population at Moores Woods is by far the largest and healthiest in the state. Within the relatively short period of time surveying the site (approx. 1 hour), dozens of individuals of *C. debilis* var. *debilis* were located within and directly adjacent to both sides of the proposed path of the railroad tracks. LIBS does not support construction of this project at Moores Woods because the proposed project will have significant negative impacts on the population of *C. debilis* var. *debilis*.

LIBS members monitor rare carrion flower. On 29 May 2019, Carole Ryder, Rich Kelly and Steve Young relocated two colonies of coastal carrion flower (*Smilax pseudochina*) at Massapequa Preserve, Nassau Co., the only known occurrence of this rare (S1) plant in New York. Plans to survey the site were in jeopardy after a shallow grave with human remains was found a few days before and police closed sections of the preserve to the public; the grave was purported to be the work of the violent MS13 gang.

Managing rare plants at the Freeman Avenue site. On 22 May 2019, John Turner (Co-chair, LIBS Conservation Committee) met on-site with Ken Ketlovich of American Towers Group (Ken oversees all 90 properties the company owns between Kentucky and Maine) to discuss and develop a management plan that promotes the protection of rare plants and biodiversity (see LIBS *Newsletter*, vol. 29, no. 1). A follow-up meeting is planned for 26 June 2019.

2nd Annual New York City EcoFlora Conference. 20 September 2019, at The New York Botanical Garden. The theme is "The Historical Flora of New York City: Implications for Conservation Action." Join NYBG's Center for Conservation Strategy staff and other renowned experts for an update on the New York City EcoFlora project, now in its second year. Sign up on NYBG's web site.

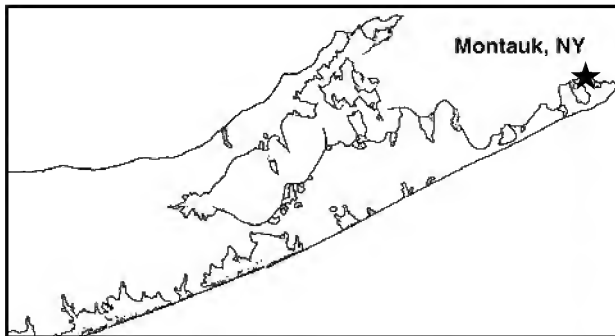
In Memoriam

Richard "Dick" Mitchell

The 4th State Botanist of New York

(*Osmanthus heterophyllus*, continued from cover)

Figure 2. right: Aerial view of the survey area of "The Island".
Figure. 2A. below: Eastern Long Island, NY. Montauk area indicated by star.



last 5-10 years in local landscapes due to its excellent deer resistance, shade tolerance, and handsome glossy, evergreen, spiny foliage. It makes an excellent hedge, barrier, and screening material. *Osmanthus heterophyllus* can have spiny juvenile leaves or adult leaves which are typically entire on mature individuals, or sometimes an individual may sport both leaf types. All individuals of *O. heterophyllus* observed by us in Montauk have had juvenile foliage only.

Background:

Osmanthus heterophyllus is not included in the flora of New York (Werier 2017) nor is it included in the floras of New England (Haines 2011), northeastern United States (Gleason and Cronquist 1991), and North America (USDA Plants Database 2019). Online searches revealed some information about this species being invasive: Early Detection & Distribution Mapping System (EDDMapS 2019) reported it in Prince George's County, MD (June 2017), the District of Columbia (Nov. 2017) and Baltimore City, MD (Feb. 2018). Additionally, the city of Alexandria, VA published a paper (Simmons 2012) entitled "Invasive exotic plants that threaten parks and natural areas in Alexandria" and *O. heterophyllus* is listed as an invasive shrub.

At a horticulture conference this past winter the senior author picked up a brochure by Cornell Cooperative Extension entitled "Long Island Gold Medal Plant Award Winners." The mission of the Gold Medal Plant Program is to identify and promote exceptional ornamental plants that will thrive in the Long Island home landscape and one of the 2017 winners was none other than *O. heterophyllus* "Goshiki".

Study site description:

The one-acre study site is located in Big Reed woods at Montauk County Park in an area locally referred to as "the island" (41.07602°N 071.91428°W). The vegetation is classified as a coastal oak-hickory forest community (Edinger et al., 2012) surrounded by a low emergent marsh bordering

the 56-acre freshwater Big Reed Pond (Fig. 2, above; Figs. 3 & 4, page 20). The dominant tree species are *Quercus alba*, *Q. velutina*, *Carya glabra*, *C. cordiformis*, *Nyssa sylvatica* and *Ilex opaca*. The shrub layer is mostly comprised of *Clethra alnifolia*, *Viburnum dentatum* var. *venosum* (S2, rare in NY), *Amelanchier canadensis*, and *Vaccinium corymbosum* along with the two subshrubs *Chimaphila maculata* and *Pyrola americana* and the ubiquitous vine *Smilax rotundifolia*. Common forbs include *Thelypteris noveboracensis*, *Fragaria vesca*, and *Carex pensylvanica*.

Methods:

The survey was conducted on 6 January 2019 at "the island" (locality where the first seedlings were observed in the park). A local surveyor, William Walsh, determined the area of the study site as 42,981.68 square feet, or 0.9867 acres (3,993 square meters or 0.399 hectares). The survey team included Victoria Bustamante, Matthew Stedman, five student interns, and five volunteers who searched the study site for two hours. When a seedling of *O. heterophyllus* was found it was assigned a number, tagged with a ribbon, measured, and the GPS coordinates recorded.

Results:

In the one-acre survey area, 56 seedlings of *O. heterophyllus* were documented. Individuals varied in height from 2.5 cm to 65 cm. Deducting the two tallest plants (16 cm and 65 cm) as the original seedlings from 2015, the average seedling was 5.6 cm, and may range from 1 to 4 years old. We cannot determine at this time the source of these individuals.

Subsequent to the initial survey the lead author was alerted to and visited a property (approximately 1.5 miles from the survey site) with a road-front planting of six mature *O. heterophyllus* individuals (10' tall), estimated to be 15 years old. Directly across the small side street were approximately 70 escaped young individuals of *O. heterophyllus*, having sprouted up in the brushy hedgerow undergrowth (Fig. 5).

(Continued on page 20)

(*Osmanthus heterophyllus*, continued from page 19)

Specimens collected. USA. New York. Suffolk Co., East Hampton Township, hamlet of Montauk: Montauk County Park, Big Reed, 4 Mar 2018, *Bustamante* 1248 (NY); Shadmoor State Park, no reproductive structures, 27 Nov 2016, *Bustamante* 981 (NY); Shadmoor State Park, flowers bisexual, creamy white, extremely fragrant, note-this is same specimen as #981 collected 27 Nov. 2016 which had no reproductive structures present, 26 Nov 2018, *Bustamante* 1483 (NY).

Potential source of seeds:

Because of the randomness of the seedlings and density in some Montauk locations, it is theorized that, in some cases, flocking birds such as cedar waxwings, red-wing blackbirds, starlings or robins may be responsible for dispersal of the seeds. Once a flock feeds on the mature fruits (a dark purple-black drupe; a fleshy one-seeded fruit), they move on to rest in treetops and drop the digested seeds through alimentary transportation. However, where is the source of these fruits? In Montauk, there are some extensive and mature (flower and seed producing) hedge plantings of *O. heterophyllus* along Old Montauk Highway and otherwise is found spottily in landscapes throughout the hamlet. Shadmoor State Park hosts two mature shrubs (approx. 9' tall) plus some younger seedlings. All other individuals observed

in Montauk are seedlings up to an estimated age of 4 years. Culloden Point Preserve and East Lake Drive have only seedlings as well.

There are at least two potential sources of seeds for young individuals of *O. heterophyllus* currently observed in Montauk: mature, horticultural individuals could be seed sources, or perhaps flocking birds may be responsible for the dispersal of seeds.

Management:

The "difficulty of control" for this species is expected to be low; not being aggressively rooted, the seedlings are easily pulled and removed, individuals are relatively slow growing and take years to become reproductively mature, and the evergreen foliage makes them easily spotted, especially in the winter against the backdrop of dry leaf litter. Although

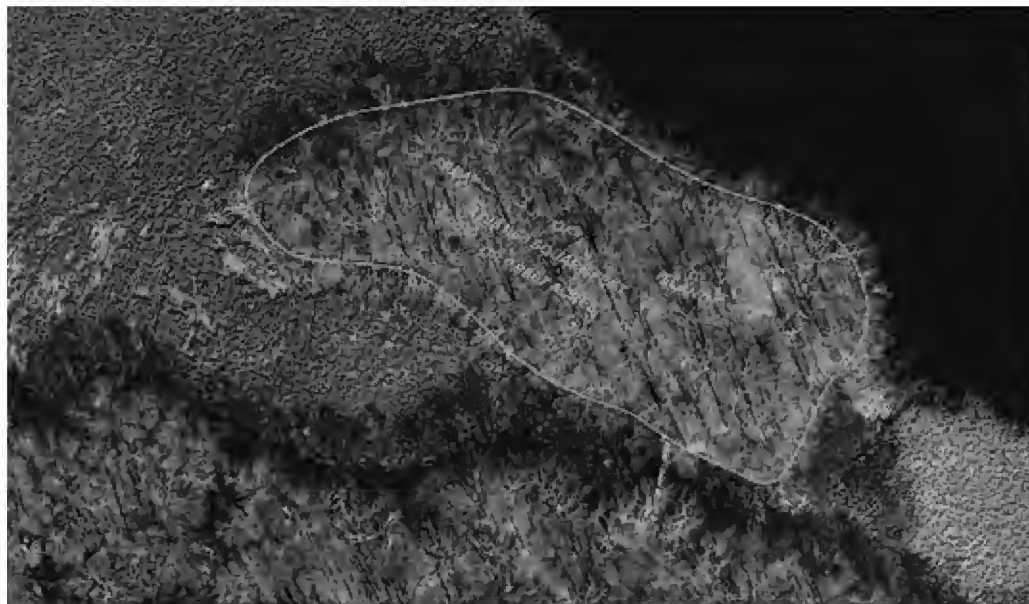


Figure 3. Aerial closeup of "The Island" survey area.



Figure 4. Survey site habitat.



Figure 5. Typical *Osmanthus* seedling in situ on forest floor.

there is not much literature or information about the flowering age of *O. heterophyllum*, Michael Dirr (1998) writes "FRUIT: Seldom seen in cultivation; the fruit is a slender, ovoid, $\frac{3}{8}$ to $\frac{1}{2}$ " long drupe with stone scarcely ribbed; have seen fruits on campus plants, not showy; ripen in fall of the year following flowering." And in another book Dirr and Heuser (1987) writes "SEED: Seeds are reported to be difficult and slow to germinate." Two commercial growers were consulted and both concurred that it doesn't flower until it is at least 7 years old. This late-fruiting characteristic is helpful in that if *Osmanthus heterophyllum* is indeed invasive, it can be controlled (pulled) long before it begins reproducing.

Conclusion:

Osmanthus heterophyllum may be going largely unnoticed on Long Island and may be more prevalent than realized due to its superficial similarity to American holly, *Ilex opaca*. It can be easy to mistake a seedling *O. heterophyllum* for an *I. opaca* seedling. The two simplest ways to distinguish between the two is *I. opaca* has leaves arranged alternately on the stem and the foliage is a dull olive-green compared to *O. heterophyllum* which has opposite, glossy, dark green leaves. Additionally, *O. heterophyllum* leaves are more deeply lobed and "spinier" than American holly.

Osmanthus heterophyllum should be on everyone's radar and if observed reported to the Long Island Botanical Society's Flora Committee.

Acknowledgments:

The authors acknowledge with gratitude the help provided by Matthew Stedman, Ed Johann, & Madison Aldrich (Third House Nature Center, Inc., www.thirdhousenaturecenter.org), William Walsh (Land Surveyor, Montauk, N.Y.), The Garden Club of East Hampton (www.gceasthampton.org), and J. M. Miedziewicki CLT, CNLP (Montauk Garden Center, Montauk, N.Y.).

Literature Cited:

DIRR, M.A. 1998. Manual of woody landscape plants. Stipes Publishing. 1250 p.

DIRR, M.A. AND C.W. HEUSER. 1987. The reference manual of woody plant propagation. Varsity Press. 424 p.

EDDMAPS (Early Detection & Distribution Mapping System). 2019. The University of Georgia - Center for Invasive Species and Ecosystem Health. <https://www.eddmaps.org/Species/subject.cfm?sub=22581>

EDINGER, G.J., D.J. EVANS, S. GEBAUER, T.G. HOWARD, D.M. HUNT, AND A.M. OLIVERO (eds.). 2002. Ecological communities of New York State. 2nd ed. A revised and expanded edition of Carol Reschke's Ecological communities of New York State. (Draft for review). New York Natural Heritage Program, New York Department of Environmental Conservation, Albany.

GLEASON, H.A. AND A. CRONQUIST. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. 2nd edition. The New York Botanical Garden, Bronx. 910 p.

HAINES, A. 2011. Flora Novae Angliae. A manual for the identification of native and naturalized higher vascular plants of New England. Yale Univ. Press, New Haven. 973 p.

SIMMONS, R.H. 2012. Invasive exotic plants that threaten parks and natural areas in Alexandria. City of Alexandria Dept. Recreation, Parks, and Cultural Activities, Alexandria. <https://www.alexandriava.gov/uploadedFiles/recreation/parks/InvasiveExoticPlantsThatThreatenParksinAlexandria.pdf>

USDA PLANTS DATABASE. 2019. U.S. Dept. Agric., Nat. Res. Conserv. Serv. Retrieved April 18, 2019 from <<http://www.plants.usda.gov>>

WERIER, D. 2017. Catalogue of the Vascular Plants of New York State. Memoirs of the Torrey Botanical Society 27: 1-542.



LIBS Membership Renewals

for 2019 are past-due. If you have not yet renewed,
please mail your dues to:

Carol Johnston, LIBS Treasurer, 347 Duck Pond Road, Locust Valley, NY 11560.
\$25 Individual, \$30 Family, \$250 Life Member

Comparison of three *Carya* (Hickory) Species from Long Island, New York

Andrew M. Greller

Prof. of Biology Emeritus, Queens College, Flushing, New York 11367

(andrew.greller@qc.cuny.edu)

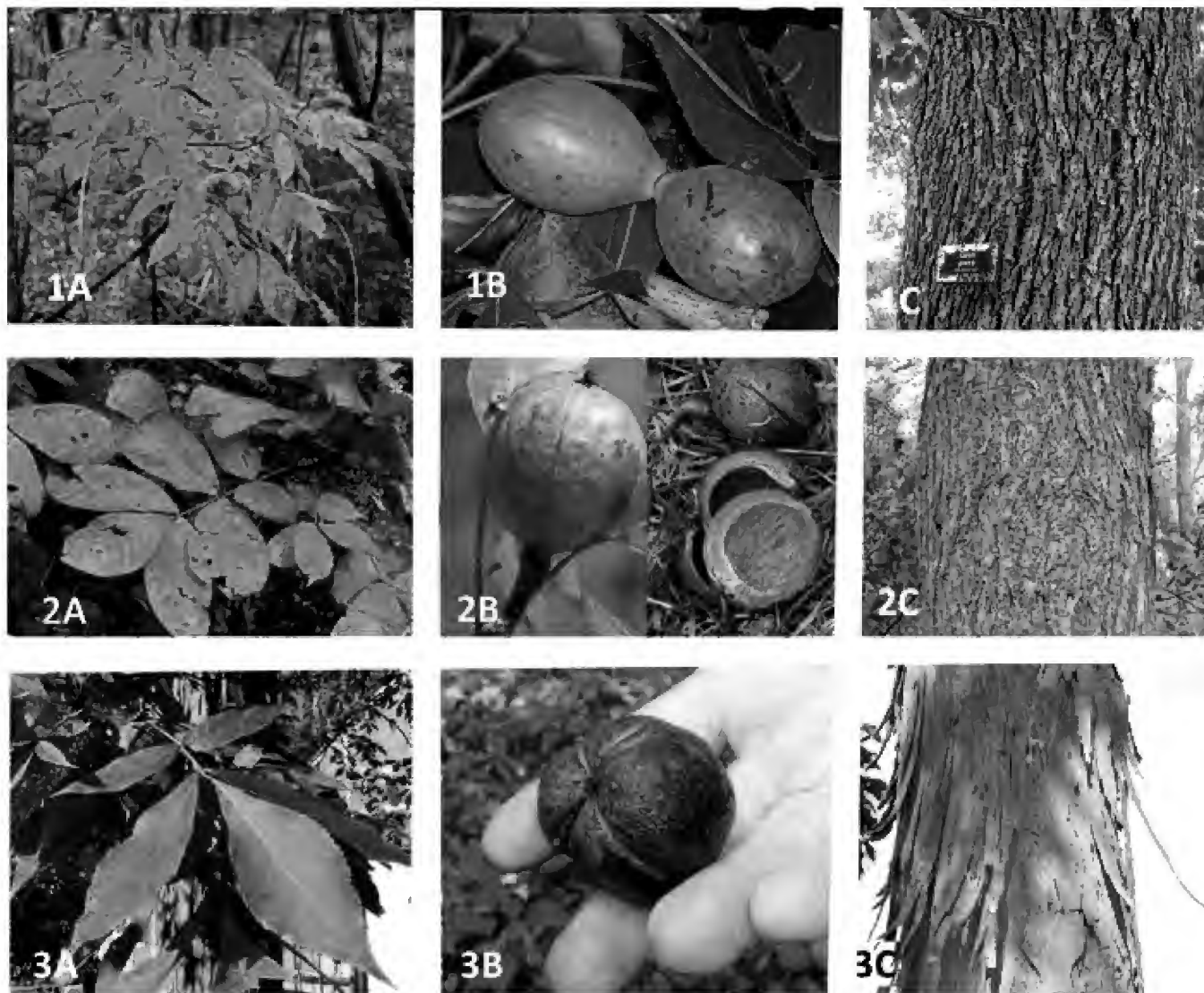


Plate 1. Photographic Comparison of *Carya glabra*, *Carya ovalis* and *Carya ovata* (all photos taken on or near Long Island, by A.M. Greller). Code: 1 *Carya glabra*; 2. *Carya ovalis*; 3. *Carya ovata*; A= Leaves; B= Fruits; C= Bark

In his excellent book, *Catalogue of the Vascular Plants of New York State*, David Werier (2017) does not recognize *Carya ovalis* (Wangenh.) Sarg. as a distinct species; rather he lumps it with *C. glabra* (Miller) Sweet into a single species and uses the name that has priority, *C. glabra*. Werier (pers. comm. 2019) explained why he lumped the two species: "Sometimes I find things that are textbook *C. ovalis* and *C. glabra* but I also find lots of things that mix and match the various character states that are used to distinguish them. My guess is further work will show there to be more than one species but I think it will be more complicated than just recognizing *C. ovalis* and *C. glabra* . . ."

Carya ovalis has a long history of being recognized as a distinct species and in nearly 50 years of field experience on Long Island, I have come to accept *C. ovalis* as a species separate from *C. glabra*. The accompanying plate illustrates the differences in leaf, fruit and bark among three species: *Carya glabra*, *C. ovalis*, and *C. ovata*. The latter is added to the comparison because the bark of certain individuals of *C. ovalis* shows some resemblance to that of *C. ovata*. In making the distinction between *C. glabra* and *C. ovalis*, I follow Manning (1950). Exact measurements for morphological structures can be obtained from Gleason and Cronquist (1991).

(Continued on page 23)

FIELD TRIPS

August 11, 2019 (Sunday) 10:00 AM

Ridgewood Reservoir Nature & History Tour

Main parking lot, Vermont Place, Highland Park (Queens County)

Trip Leaders: Rob Jett and Andy Greller

E-mail NewtownHistory@gmail.com or agreller2@optonline.net

The Newtown Historical Society will lead us on a natural history and history tour of the Ridgewood Reservoir, which was recently added to The National Register of Historic Places. We will walk around the granite-block reservoir looking for aquatic and woodland birds, and for plants that have come in after the abandonment of Ridgewood Reservoir as a water source for the City of Brooklyn. If time permits, we will explore the woodland that has developed at the bottom of the large, treed kettle hole in adjacent Highland Park. Leading for the Newtown Historical Soc. will be Rob Jett author of *The City Birder* and for LIBS it will be our own Andy Greller.

We will meet at the Vermont Place parking lot of Highland Park, which is exit 2 of the Jackie Robinson Parkway. Dress for the weather, bring a snack, water and insect repellent. Binoculars and a hand lens are recommended.

Contact the Newtown Historical Soc. or Andy to RSVP or for further information.

September 22, 2019 (Sunday), 10AM – 2PM

SMARTWEED SAVVY

Alley Pond Park, Queens, NY

Trip Leader: Daniel Atha

(datha@nybg.org; 718-514-3922)

More than twenty species of Smartweed occur in New York State. These beautiful plants are intimately associated with animal disturbance (including humans) and are abundant in both wilderness and urban environments. They are also challenging to identify and floras, field guides and manuals are often difficult. Join North America's Smartweed expert, Daniel Atha on a field trip to Alley Pond Park where almost half of state's Smartweeds have been found. Learn the best characters to reliably identify Smartweed from both fresh and preserved specimens. This is a joint field trip with New York Flora Association, the Long Island Botanical Society and the NYBG's New York City EcoFlora.

Lightning and heavy rain cancel. Bring a hand lens, suitable clothing, insect repellent, water and snacks.



(*Carya*, continued from page 22)

Field Recognition.

Briefly, the three hickories can be distinguished in the field on Long Island, as follows:

Carya glabra, pignut hickory, has dark, close bark, with firm ridges; leaves usually with 5 small leaflets; terminal buds relatively small; fruits are obovoid (pear-shaped) and attach to the stem by a very short stalk (Plate 1, Figure 1B); husk opens only at the distal end, never splitting to the base.

Carya ovalis, sweet pignut hickory or red hickory, has light bark that varies from smooth (young) to platy, with narrow, loose rectangular plates at maturity; some mature individuals have long plates that pull away from the trunk, distally; leaves are relatively large, usually with 7 leaflets, where the terminal leaflet is smaller than, or equal to, the adjacent two; terminal buds are relatively large; fruits small, globular; splitting to the base to liberate the nut; husks often split into three, a half-wall and two quarter-walls (Plate 1, Figure 2B).

Carya ovata, shagbark hickory, has light-colored bark that forms long strips; they pull away from the bark at both ends; leaves with 5 (rarely 7) leaflets, similar in size to *Carya ovalis*, but the terminal leaflet is larger than the two adjacent leaflets; husks thick, splitting to base; nut is angular.

Ecological and Geographical Distinctions for Long Island.

Carya ovalis is by far the most common hickory on Long Island. It is present in a range of oak-dominated forests from dry to moist. Its range occupies the center of Long Island and spreads to the northern coast and to the eastern ends. *Carya glabra* occurs scattered through the moist oak forests of the island. It is more common near the northern shore of Long Island, and forms a nearly pure stand on a moist slope in Ridge, in northern Suffolk County; it also occurs in the oak-tuliptree forests of western Long Island. *Carya ovata* is relatively rare on Long Island. Usually one encounters that species as individual trees, e.g. near Ft. Totten, in Queens County; and it occurs as a few specimens in Coffin Woods, Locust Valley, Nassau County. There is a stand of young *C. ovata* trees in Louis Clark Sanctuary, Old Brookville, Nassau County (a North Shore Land Alliance preserve).

Literature Cited.

- GLEASON, H.A. AND A. CRONQUIST. 1991. Manual of vascular plants of northeastern United States and adjacent Canada. 2nd edition. The New York Botanical Garden, Bronx. 910 p.
- MANNING, W.E. 1950. A key to the hickories north of Virginia with notes on the two pignuts. *Rhodora* 52: 188-199.
- WERIER, D. 2017. Catalogue of the vascular plants of New York State. *Memoirs of the Torrey Botanical Society* 27: 1-542.

UPCOMING PROGRAMS

September 10, 2019* Tuesday, 7:30 PM

Rich Ring: "Rare Plants in Long Island State Parks."

This presentation will highlight the rare flora of Long Island, with an emphasis on State parks. Attention will be given to both recent discoveries and historical records. Rich has been a botanist with the NY Natural Heritage Program since 2006. Previously, he worked as a field ornithologist, ecologist, and botanist in Pennsylvania, New Hampshire, Michigan, and Alaska. He currently resides in Troy, NY.

October 8, 2019* Tuesday, 7:30 PM

Andrew Greller: "Wildflowers of the Island of Crete, Greece." This talk will cover the mountains and seashore habitats of Crete, with many orchid species highlighted from this Bob Gibbons led trip. Coverage will include the Sclerophyll Woodlands

of Mediterranean evergreens and the Garrigue shrublands or chaparral type habitats. Andy is Vice President of LIBS and Professor Emeritus of Biology, Queens College. In 2017 he was honored with the Torrey Botanical Society's Distinguished Service Award.

November 12, 2019* Tuesday, 7:30PM

Daniel Atha: "New York's Worst Invasives No One Has Ever Heard Of." Eleven non-native plant species have recently been discovered in New York City. Some are highly invasive and pose a serious threat to gardens and natural areas. Hear how they were discovered and learn the key characters for identification. Daniel Atha (The New York Botanical Garden) co-manages the New York City EcoFlora, a community science project to document the wild flora of New York City.

* All programs held at Bill Paterson Nature Center, Muttontown Preserve, East Norwich
Refreshments and informal talk begin at 7:30 p.m. Formal meeting starts at 8:00 p.m.
Directions to Muttontown: 516-354-6506